

**REMARKS:**

Claims 6 and 8-9 are in the case and presented for consideration.

The Examiner has rejected claim 6 under 35 U.S.C. 102(b) as being anticipated by Japanese patent JP 10321842A (hereinafter "JP '842") to Isohata et al. Applicant does not have an abstract translated in the English language for the cited Japanese patent. However, U.S. Patent 6,054,736 to Shigehara et al. claims foreign priority from the aforementioned Japanese patent. Applicant will therefore refer to the corresponding '736 patent for ease of understanding and assumes that since the drawings between the two references are the same, that the description is the same. The Examiner is invited to point out any differences between the two references.

Applicant respectfully submits that the '736 patent and its foreign counterpart fail to teach limitations recited by claim 6 of applicant's invention. First, the Examiner states, "a fourth region 12b<sub>1</sub> of the first conductivity (n) type which is separated from the second region 1 by the third region 12b<sub>2</sub>." Although these are limitations recited in claim 6, they are not present in the '736 patent.

The Examiner has noted figures 2A and 2B. However, figures 2A and 2B do not show that region 12b<sub>1</sub> is separated from the second region 1 by the third region 12b<sub>2</sub>. Additionally, col. 7, lines 37-38 of the '736 patent state that the "n<sup>-</sup>-diffusion layer region 8b is formed so as to isolate the n<sup>+</sup>-diffusion layer regions 12b<sub>1</sub> and 12b<sub>2</sub>." The fourth region 12b<sub>1</sub> is separated from the second region 1 by the region 8b and not by the third region 12b<sub>2</sub>. Because regions 12b<sub>1</sub> and 12b<sub>2</sub> are shown spaced apart, region 12b<sub>1</sub> is not separated from second region 1 by the 12b<sub>2</sub> region. Nor do any of the other figures or embodiments disclose region 12b<sub>1</sub> separated from second region 1 by the third

region 12b<sub>2</sub>. In each embodiment, 12b<sub>1</sub> and 12b<sub>2</sub> are spaced apart so that region 12b<sub>2</sub> does not separate region 12b<sub>1</sub> from any region.

Second, the Examiner states that the fourth region 12b<sub>1</sub> has a higher doping concentration than the third region 12b<sub>2</sub>. This is not indicated anywhere in the '736 patent. At col. 3, lines 9-37, col. 4, lines 1-30, 48-68, and col. 8, lines 30-35, the impurity concentration of "drain" regions 12b<sub>1</sub> and 12b<sub>2</sub> is compared to other diffusion layers or channels, but the impurity concentration of the region 12b<sub>1</sub> is never compared to the impurity concentration of the region 12b<sub>2</sub>.

The Examiner thirdly points out that the JP '842 reference teaches "the first, the second and the fourth region 12b<sub>1</sub> being provided with terminals 18a and/or 18b." Although these limitation are recited by claim 6, they are not taught by JP '842. At col. 6, lines 57-61, the '736 patent states "The interlayer insulator film 17 has contact holes for providing contacts 15a and 15b to the source and drain regions 12a and 12b<sub>2</sub>. A source electrode 18a and a drain electrode 18b are formed so as to fill in the contact holes." Therefore, region 12b<sub>1</sub> is not provided with a terminal. Nor is the second region 1 provided with terminals 18a and/or 18b. Therefore, the second and fourth region 12b<sub>1</sub> are not provided with terminals 18a and/or 18b.

Fourth, the Examiner states "wherein the third region 12b<sub>2</sub> is provided with a protection zone 20 of the first conductivity (n) type having a higher doping concentration than the third region 12b<sub>2</sub> and is situated near the fourth region 12b<sub>1</sub> and around the fourth region, and separated from said fourth region 12b<sub>1</sub> by an intermediate, comparatively high-impedance region." Figures 2A and 2B, which the Examiner has noted, do not show a reference numeral 20. However, reference numeral 20 is shown

in Fig. 14 of the '736 patent and the JP '842 counterpart. Col. 1, lines 54-56 of the '736 patent refer to reference numeral 20 as a current limiting resistor arranged between a surge voltage applied point 25 and a drain electrode 18b. Therefore, reference numeral 20 does not refer to a protection zone.

However, reference numeral 17 refers to an interlayer insulator film which is separated from the second region 1 by the third region 12b<sub>2</sub>. Still, the insulator film 17 is not situated around the fourth region as required by claim 6. Furthermore, insulator film 17 is not separated from the fourth region 12b<sub>1</sub> by a comparatively high-impedance region. As illustrated in all of the figures, there is no region between region 12b<sub>1</sub> and insulator film 17.

Finally, it is stated that "the third region 12b<sub>2</sub> and the fourth region 12b<sub>1</sub> form, respectively, a drift region and a drain region of a lateral DMOS transistor." As indicated at col. 6, lines 44-45 of the '736 patent, high density n<sup>+</sup>-diffusion layer regions 12b<sub>1</sub> and 12b<sub>2</sub> both serve as drain regions. Neither serves as a drift region.

Accordingly, the '736 patent fails to teach many of the limitations recited in claim 6 of applicant's invention. Therefore, it is believed that its corresponding Japanese patent fails to teach the same claimed limitations. Therefore, applicant respectfully submits that claim 6 is not anticipated by JP '842.

In addition, the Examiner has rejected claim 8 under 35 U.S.C. §103(a) as obvious over JP '842 in view of U.S. Patent 5,578,859 to Wondrak et al. The Examiner states that Isohata et al. does not disclose that the semiconductor device is of the RESURF type, but that "Wondrak et al. discloses a semiconductor device with a third region of the first conductivity type, which is adjacent the second region and separated

from the first region by the second region, that forms a drift region of a lateral DMOS transistor."

The Examiner's rejection is respectfully traversed because JP '842 does not teach several limitations recited in claim 8 of applicant's invention. The failure to teach these limitations is explained in the discussion above with respect to the failure of JP '842 to teach limitations recited in claim 6 because the limitations of claim 8 are substantially the same as those of claim 6. Claim 8 only recites the additional limitation that the device is of the RESURF type. Moreover, the Examiner has not shown that Wondrak '859 teaches all of the limitations of claim 8. Because JP '842 fails to teach several of the limitations recited in claim 8, and Wondrak '859 likewise does not teach those limitations, claim 8 is not made obvious.

Also, it is not clear from the Examiner's description which regions of the Wondrak '859 patent are considered to be the first region and second region. The third region has been designated by the Examiner as drift zone 4, but is surrounded by a variety of regions.

Nor has the Examiner shown that the first region has a first conductivity type, that the second region has a second, opposite conductivity type, or that the third region has the first conductivity type. The third region drift zone 4 is surrounded by an insulating layer 9, metalization layers 13, and a dielectric layer 3, none of which carry any specific conductivity type according to the specification. The first, second, and third regions of the semiconductor in the Wondrak '859 patent must have the same first and second conductivity types as recited in claim 8, in order to make claim 8 obvious from JP '842 in view of Wondrak '859. Otherwise, there is no teaching or suggestion that the

first, second and third regions of the JP '842 semiconductor device can be used in the completely different Wondrak '859 semiconductor device.

Finally, it is noted that the third region cited in JP '842 is a drain region. As emphasized above, JP '842 does not teach a drift region. Because Wondrak '859 teaches a third drift region having a product of thickness and a doping concentration that satisfy the RESURF criterion, and JP '842 does not teach a drift region, the two references are not combinable.

Accordingly, the application and claims are believed to be in condition for allowance, and favorable action is respectfully requested. No new matter has been added.

If any issues remain which may be resolved by telephonic communication, the Examiner is respectfully invited to contact the undersigned at the number below, if such will advance the application to allowance.

Favorable action is respectfully requested.

Respectfully submitted,



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